

FORMING A TRENCH TO DEFINE ONE OR MORE ISOLATION  
REGIONS IN A SEMICONDUCTOR STRUCTURE

ABSTRACT

5        In one embodiment, a method for forming a semiconductor structure in manufacturing a semiconductor device includes providing a pad layer on a surface of a substrate, providing a nitride layer on the pad layer, and providing a sacrificial oxide layer on the nitride layer. In a first etching step, at least the sacrificial oxide and nitride layers are etched to define opposing substantially vertical surfaces of at least the sacrificial oxide and nitride layers. In a second etching step, the nitride layer is etched such that the opposing substantially vertical surfaces of the nitride layer are recessed from the opposing substantially vertical surfaces of the sacrificial oxide layer, the sacrificial oxide layer substantially preventing the nitride layer from decreasing in thickness as a result of the etching of the nitride layer. In a third etching  
10      step, the substrate is etched to form a trench extending into the substrate for purposes  
15      of defining one or more isolation regions adjacent the trench.